

## ABSTRACT

For provides a superconducting material comprising highly chemically stable Fullerene carbon molecules having a  
5 relatively high transition temperature and high chemical stability,  $C_{20}$  Fullerene molecules having stronger electron-lattice interaction than that of  $C_{60}$  Fullerene molecules are used, in order to polymerize the  $C_{20}$  Fullerene molecules into a one-dimensional chain,  $C_{20}$  is incorporated in a gap of a  
10 material having a large band gap between a valence band and a conduction band, thereafter, electrons or positive holes are injected into the obtained  $C_{20}$  Fullerene chain polymer via an electric field application for phase transition to a superconductor.

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